delivering the sample through said nozzle, said sample flowing at a variable sample volumetric rate and being drawn into the sheath stream so as to form a suspension stream of a diameter fixed by the sheath stream;

flowing the suspension stream past a detection apparatus for detecting a characteristic of the suspension stream, wherein the detection of said characteristic is dependent upon the sheath volumetric rate and the sample volumetric rate;

analyzing the detected characteristic with respect to a predetermined operating criteria and determining control parameters to achieve the predetermined operating criteria;

controlling the sample pump to vary the sample volumetric [delivery] rate in response to the control parameters at the same time the characteristic is being detected; and

controlling the sheath pump to vary the sample volumetric rate in response to the control parameters at the same time the characteristic is being detected.

REMARKS

Claims 18-22 remain pending in this application. In the Office Action of July 22,2002, Claims 18-22 were rejected under 35 U.S.C. §112 as being indefinite. In addition, claims 18-22 were rejected as being unpatentable over U.S. Patent No. 5,106,187 -

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Bezanson in view of U.S. Patent No. 5,895,764 -Sklar. Reconsideration and withdrawal of the rejections are requested for the reasons stated below.

35 U.S.C. §112 Rejections

Claims 18-22 stand rejected under §112, Second paragraph as failing to particularly point out and distinctly claim the invention. Claim 18 has been amended to clarify the steps of the method. A sample, flowing in a sample stream, is introduced into a sheath stream forming a suspension stream. The sheath stream and sample stream are flowing at distinct volumetric flow rates that can each be varied. The suspension stream flows past a detection apparatus where a desired characteristic of the sample is measured.

The measured characteristic is compared to operating criteria. This comparison leads to the generation of control parameters. The parameters control the volumetric flow rates of the sheath stream and the sample volumetric flow rates. In this manner, the detection of characteristics of the sample can be adjusted.

As amended, claim 18 is definite and clearly recites the method of the present invention. No mew matter has been added to claim 18 in making these amendments and support therefore can be found in Figure 1 and in the Specification at Page 4, Lines 10-20.

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Accordingly, the Applicant requests that the rejection of claim 18 be withdrawn. For the same reasons as stated above, Applicant requests that the rejection of claims 19-22, which are dependent upon claim 18, also be withdrawn.

35 U.S.C. § 103 Rejections

Claim 18-22 are generally directed to a method for determining the characteristics of a sample. In particular, claims 18-22 are directed to a method which extends the dynamic range of a flow cell detection apparatus as disclosed in the Specification.

When counting, or otherwise measuring a characteristic of a particle, flow cell systems experience limitations. The goal is to flow an adequate amount of cells or particles past a detection point one at a time. If the sample flow is not proper, then the population of particles or cells will be too low to obtain a meaningful measurement. Overload, as the name suggests, results from an overabundance of particles. This causes faulty readings as more than one particle may flow past the detection point at any one time.

In order to solve this problem, the volumetric flow rates of the sample and sheath fluid must be varied. In general, varying the flow rate of the sheath fluid adjusts the amount of particles flowing past the detection point so as to assure one at a time

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flow. Adjusting the flow rate of the sample controls the population of cells and particles. The present invention utilizes a feed back system to evaluate the measured characteristics against desired operational parameters. In response to this evaluation, control parameters are generated that control the flow rates of the sample and sheath stream as the measurement of the characteristic is in progress.

The system of Bezanson flows the sample past the detection point and performs a comparison to pre-determined parameters. This is done so as to determine characteristics of the cell. If the measurements obtained by Bezanson are faulty, this is determined, if at all, only after the sample has flowed past the detection point. Thus Bezanson fails to disclose any kind of method for adjusting the flow rates while detection of a characteristic of the sample is being conducted. Sklar also fails to suggest or disclose a method to accomplish this. Therefore, even if one were to modify Bezanson in view of Sklar the present invention, as recited in claim 18, would not be obtained. Accordingly, the applicant respectfully requests the rejections of claims 18, and claims 19-22 which depend therefrom, be withdrawn.

CONCLUSION

Every effort has been made to define particularly and

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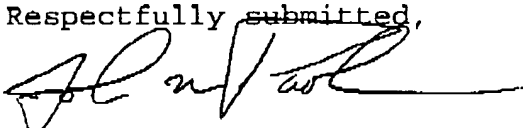
distinctly the subject matter of the invention. The claims are definite, and are patentable over the prior art of record. For all the foregoing reasons, the differences between the invention and the prior art of record are such that the subject matter claimed as a whole is patentable over the prior art cited by the Examiner. Reconsideration, and allowance of the pending claims, are respectfully requested.

Respectfully submitted,



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MST-2322.1 **PATENT**

MARKED UP COPY OF CLAIMS

18. (Amended) A method for determining a characteristic of a sample comprising the steps of:

[delivering the sample through a nozzle, said sample flowing at a sample volumetric flow delivery rate;]

delivering a sheath fluid into a conduit having a nozzle located centrally therein, said sheath fluid flowing at a variable sheath volumetric [delivery] rate so as to create [in] a laminar flow sheath stream [laminar flow stream];

delivering the sample through said nozzle, said sample flowing at a variable sample volumetric [delivery] rate and being drawn [; drawing the sample] into the sheath stream so as to form [in] a suspension stream of a [fixed] diameter [into] fixed by the sheath stream;

flowing the suspension stream past a detection apparatus for detecting a characteristic of the [drawn] suspension stream, wherein the detection of said characteristic is dependent upon the sheath volumetric rate and the sample volumetric rate;

analyzing the detected characteristic with respect to a predetermined operating criteria and determining control parameters to achieve the predetermined [characteristic] operating criteria;

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controlling the sample pump to vary the sample volumetric [delivery] rate in response to the control parameters at the same time the characteristic is being detected; and

controlling the sheath pump to vary the sample volumetric [delivery] rate in response to the control parameters at the same time the characteristic is being detected.

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** TOTAL PAGE.14 **